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CUSTOMER SERVICES Author : Fabrice Tant Approval : Jean Pierre Hollande Operational Manager	**SERVICE REPAIR SUPPORT PROCEDURE**	PCC/VY/691/E/TCD188LVL2/0026/TF/MLD Creation Date : 26/06/2000 Page : 1 of 30

Service Manual

Repair for Cellular Telephone

SAVVY VOGUE DUAL BAND
Level 1 & Level 2

Service Manual

Updated dates:

DATE	MODIFICATION	PAGE
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CONTENTS

1.0 PURPOSE.....4

2.0 SCOPE....4

3.0 REFERENCE....4

4.0 GLOSSARY / ACRONYM LIST....4

5.0 TEST EQUIPMENT AND TOOLS....4

6.0 TEST & INSPECTION PLAN....4

6.1 User Interface Test....5
6.2 RF Test....5

7.0 BEFORE YOU START....6

7.1 Description of the transceiver....6
7.2 The display....12
7.3 Inserting the SIM card (Micro)....12
7.4 Inserting the Battery and Battery Cover....12
7.5 Removing the Battery Cover and Battery....13
7.6 Charging the battery....13

8.0 TEST PROCEDURES....14

8.1Initial Functional Check for TCD188 Savvy Vogue....14
8.2 RF Test....17
8.3 Charging IGN (Ignition) - Battery....19

9.0ASSEMBLY / DISMANTLEMENT PROCEDURES....20

9.1 Dismantlement....21
9.2Assembly....21
9.3 Overview....27

10.0DEFAULTS SETTINGS....28

10.1 Reset customer parameters. 28
10.2 Use of the GSM string *#RSAV*# or *#7728*#....29

11.0SOLUTIONS IN CASE OF PROBLEM DURING TESTS....29

11.1 The mobile does not switch on....29
11.2 Charge does not start or no charger detection....30
11.3 The display show “No SIM card. Please insert your SIM card.” Or “SIM FAILURE”....30
11.4 Display problems....30
11.5 Buzzer problems....30
11.6 No sound in Loudspeaker....31
11.7 Communications problems....31
11.8 Defective antenna....31
11.9 Keyboard problems....31
11.10 Can’t send SMS messages....31

1.0 PURPOSE

This document establishes the functional test procedures for service repair of SAVVY VOGUE transceiver.

2.0 SCOPE

The test plan is applicable to all level of service repair of SAVVY VOGUE transceiver.

3.0 REFERENCE

4.0 GLOSSARY / ACRONYM LIST

Window or Bezzel	Protective plastic over the LCD display
SW	Software
PN	Hardware configuration of the Mobile
CN	Matrix for types of SW used on the different Hardware
HW	Hardware
ASC	Authorized Service Center
NSC	National Service Center
Test SIM card	Use for functionality of Philips Mobiles
Test SIM card “SP”	SIM card used to simulate user interface and allows radio tests

5.0 TEST EQUIPMENT AND TOOLS

Equipment / Tools

- Production Test SIM Card - Part No. : 4311 255 00781
- Test SIM Card “SP” - Part No. : 4311 255 00782
- RF Cable - Part No. : 941-555-1 (AMP)
- Digital Multimeter - Recommended Model : Fluke
  Specification with current reading in mA

6.0 TEST & INSPECTION PLAN

The following test & inspection plan is derived from the Product Test Reference for SAVVY VOGUE.

6.1 User Interface Test

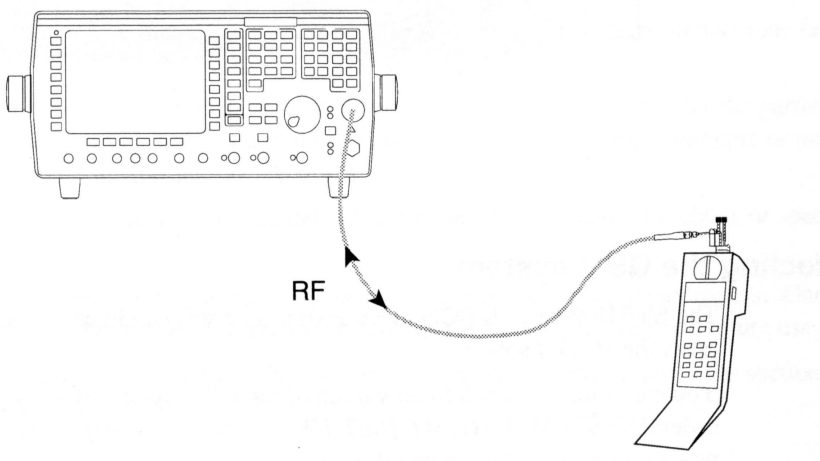
Using of TEST SIM Card "SP" / Production to test DUT as follow:

- On/Off Button
- LCD Back-light
- Keyboard Test
- Buzzer Test
- Audio Test
- Antenna Test
- LCD
- IMEI
- E-prom Status
- Production Number
- Transceiver 12NCs & Software Version

With a fast charger connected to the PRODUCT car-kit, perform check on charging IGN (Ignition) – Battery.

6.2 RF Test

The radio test must be performed with a Digital Radio Test Set connected with the specific RF cable to the mobile RF connector.



7.0 Before You Start

7.1 Description of the transceiver

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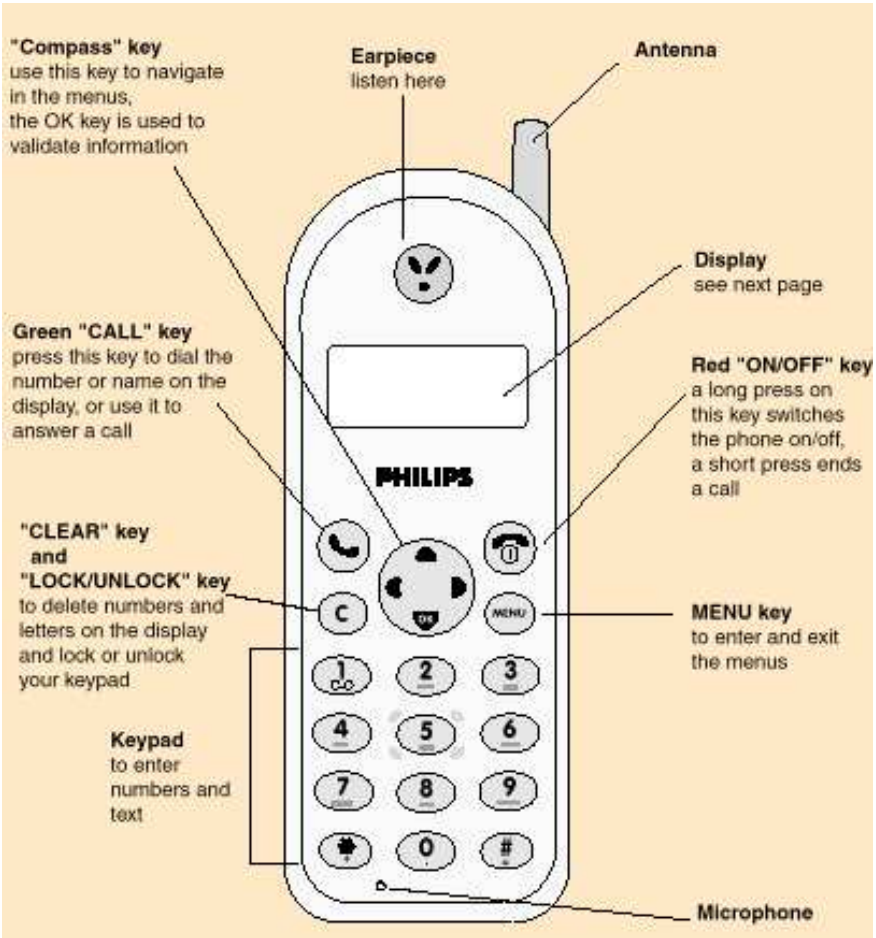
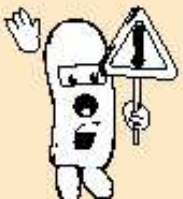
CUSTOMER SERVICES Author : Fabrice Tant Approval : Jean Pierre Hollande Operational Manager	**SERVICE REPAIR SUPPORT PROCEDURE**	PCC/VY/691/E/TCD188LVL2/0026/TF/MLD Creation Date : 26/06/2000 Page : 8 of 30





If you encounter the *symbol in this manual, it means that you have to press and hold the key to activate the function.*

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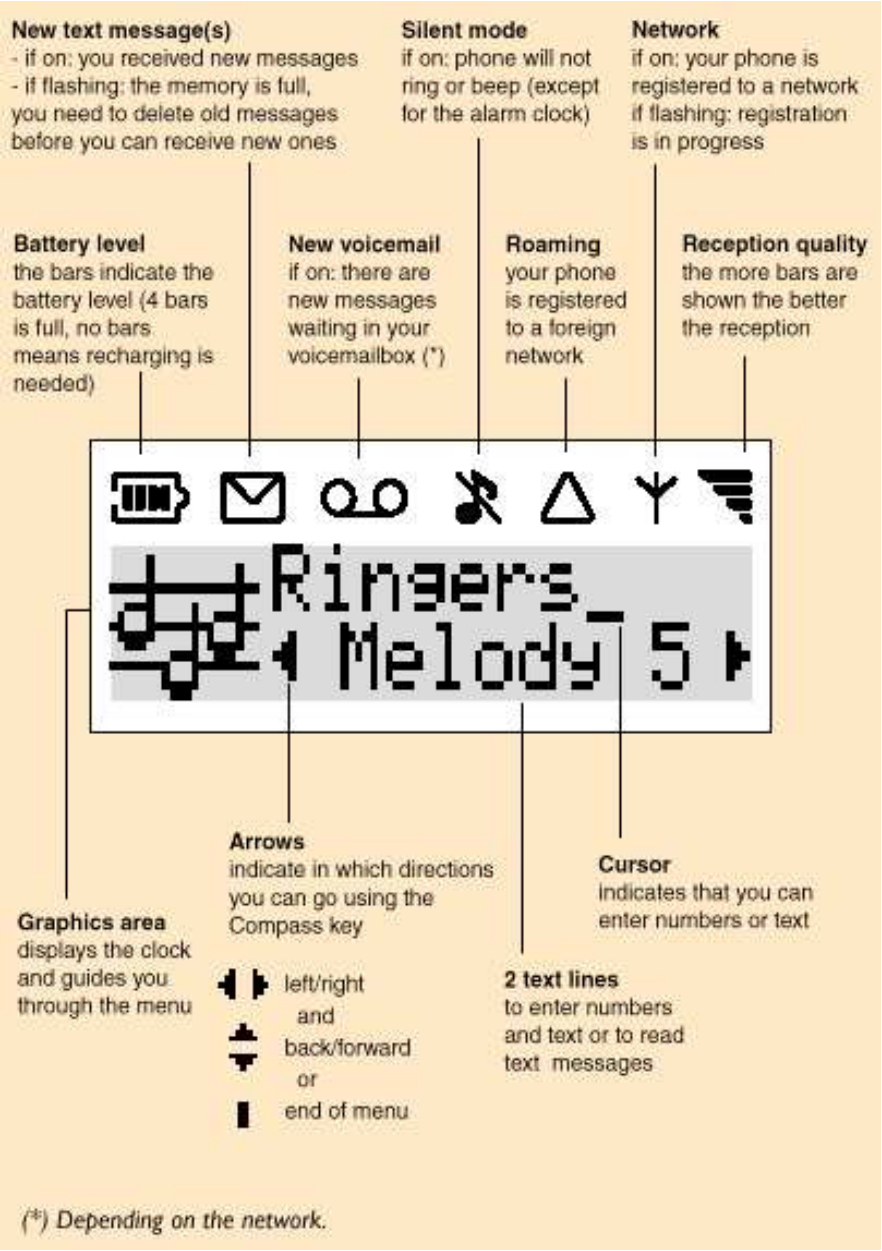
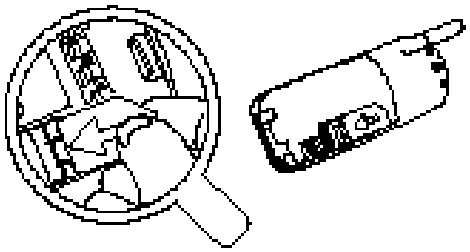

New text message(s)
- if on: you received new messages
- if flashing: the memory is full, you need to delete old messages before you can receive new ones
Silent mode
if on: phone will not ring or beep (except for the alarm clock)
Network
if on: your phone is registered to a network
if flashing: registration is in progress
Battery level
the bars indicate the battery level (4 bars is full, no bars means recharging is needed)
New voicemail
if on: there are new messages waiting in your voicemailbox (*)
Roaming
your phone is registered to a foreign network
Reception quality
the more bars are shown the better the reception
Ringers
Melody 5
Graphics area
displays the clock and guides you through the menu
Arrows
indicate in which directions you can go using the Compass key
left/right and back/forward or end of menu
2 text lines
to enter numbers and text or to read text messages
Cursor
indicates that you can enter numbers or text
(*) Depending on the network.

7.2 The display

7.3 Inserting the SIM card (Micro).

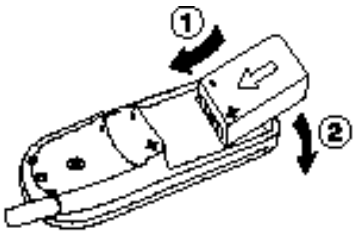
7.3.1 Remove the SIM card from its support and slide the card into the appropriate slot in the battery compartment (the chip must be facing inwards and towards the bottom of the transceiver).

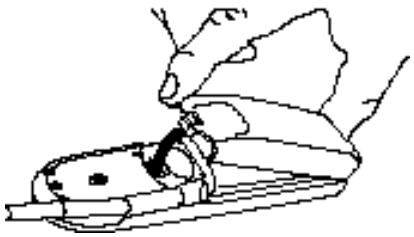


7.4 Inserting the Battery and Battery Cover.

7.4.1 Slide the battery onto the contact near the middle of the transceiver, and press the battery in place.

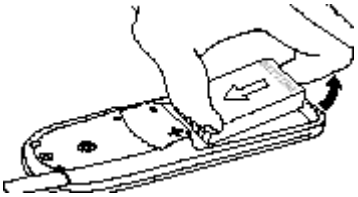
7.4.2 Hook the battery cover onto the hinges on bottom of transceiver and press forward until the latch catches.





7.5 Removing the Battery Cover and Battery.

7.5.1 Press on the latch on the back of the transceiver and lift off the battery cover.
Lift up on the bottom of the battery and remove from the transceiver.

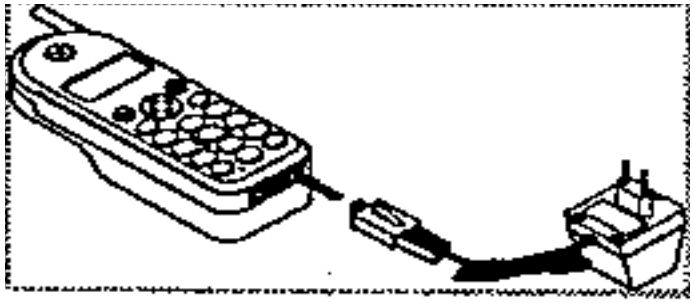


7.6 Charging the battery

7.6.1 With the battery attached to the phone, plug the connector into the right socket at the base of the phone.
7.6.2 Plug the transformer unit into an AC power socket.
7.6.3 The battery icon on the transceiver's display indicates the state of the charge process:

- Bars moving - means the battery is charging.
- Steady - means the battery is fully charged.

If the battery is completely discharged, the battery icon will only appear 2 to 3 minutes after you connect the charger.



8.0 Test Procedures

8.1 Initial Functional Check for TCD188 Savvy Vogue

8.1.1 Insert the Test Production Card into the SIM Reader at the back of the cellular phone and clip on a charged battery on to the phone.
8.1.2 Press ON - Button for at least 2 second and the LCD of the product shows the message :
“FA GOOD xx”.
8.1.3 Following the instructions :

Step	Procedure		Observation
1	Press Key 1 Press Key 1 again		Continue Buzzer signal Left corner displays 1 00
2	Press key 2 Sleep Mode Test Press key 2 again		The mobile sleeps for 5 minutes or wakes up after a key press and display the error code (00 means sleep mode successfully achieved Left corner displays 2 01
3	Press key 3 Audio loop test (Speak to Mic and listen echo from Speaker) Press key 3 again		"AUDIO xx xx "xx xx xx xx Left corner displays 3 02
4	Press key 4 Press key 4 again		Antenna test “Tx Level "05" (default) "CHANNEL 001" (default) Left corner displays 4 03
5	Press Key 5 Press Key 5 again		All pixels and hard icons on Left corner displays 5 04
6	Press Key 6 (Checkerboard test) Press Key 6 again		Checkerboard 1 pixel on Left corner displays 6 05

7	Press Key 7 (Inverted Checkerboard) Press key 7 again		Checkerboard 2 pixel on Left corner displays 7 06
8	Press key 8 (Eeprom Status) Press Key 8 again		"H XXXXXXXX" (No digit “1” or “2” allowed) "L XXXXXXXX" Left corner displays 8 07
9	Press Key 9 Product information Compare information with label printed on back case Press key 9 again		PN number : “Vyxxxxx VY made in Le Mans SA made in Singapore EO made in Shenzhen Left corner displays 9 08
10	Press key 0 (Vibrator Test) Press key 0 again		Display product 12NC # and software version The mobile’s vibrator is running Left corner displays 0 09
11	Press * (IMEI Test) Compare IMEI with label printed on back case Press * again		"IMEI TEST" " 449680/ 50 / xxxxxxx" for (TCD168) 06 made in Singapore 50 made in Le-Mans 69 made in China "Serial Number/ Check digit" Left corner displays * 11
12	Press # (FA Status) Press # again		"FA GOOD XX” (Must be Good) Left corner displays # 12
13	Press C (Power Test) Press C again		" Power"/ Channel/level "--/--/---" (ignore reading) Left corner displays C 13

14	Press ◄ (Left arrowhead) (Audio loop local effect) Press ■ (left dot) again		"LocalEffect" " xx xx xx xx " Left corner displays . ← 0C
15	Press ► (Right arrowhead) Press ► (Right arrowhead)again		"TypBat / xxxx" (ignore the number "TmpRad / xxxx displayed) Left corner displays . → 0D
16	Press MENU (Carkit Audio loop on/off) Press MENU again		"CAR KIT" "xx xx xx " (ignore reading) Left corner displays 4 10
17	Press OK button ▼ (Memory Test) Press OK button ▼ again		"Flash Checksum " (ignore Number) "Flash constructor ID / Flash type ID" (ignore #) " OK" displayed vertically on the right Left corner displays ▼ 0B
18	Press Up button ▲ Press ▲ button again		User Melody Left corner displays ▲ 0A
19	Press Green button Press Green button again		" MANUAL TEST" " GOOD " Left corner displays >> 0E
20	Press Red button Press Red button again		" MANUAL TEST" " BAD " Left corner displays ■■ 0F

8.1.4 If any of the step failed functional, refer to Chapter 10.

8.1.5 Perform visual check on battery connectors, car kit connectors and casing.
If corrosion or deform send to NSC for repair.

8.1.6 If the product is good, it is considered as a NFF product.
All the NFF products must be directly returned to the customer.

8.2 RF Test

8.2.1 The Test SIM Card “SP” must be inserted in to the phone before starting the test.

8.2.2 Set the equipment as shown in picture chapter 6.2
The RF cable to use is made by AMP (Part No.: 941-555-1)

8.2.3 Set in the offset field of the radio tester a - 0.3dBm lose for GSM Tests and a - 0.5dBm lose for PCN tests.

8.2.4 The followings operations must be done:

- Synchronization/Registration
- Call set up from the mobile
- Voice loopback (check sound quality)
- Call release
- Call set up from tester
- Call release from tester

8.2.5 The followings parameters must be checked in TCH loop mode:

Emission parameters

- Power level
- RMS phase error
- Peak phase error
- Frequency error
- Power ramping

Reception parameters

- Rx level
- Rx quality
- BER (Byte Error Rate)
- FER (Frequency Error Rate)

Generally the test sequences built-in the testers will be used to check the mobile. You must assess that the test sequences limits comply with the standard specifications.

8.2.6 GSM Specification (900 Mhz)

Test Parameters	**Channel**	**Level**	**Standard Specification**
EMISSION			
Phase error RMS	1, 62, 124	5, 10, 15, 19	0 to 5.0 degree
Phase error Peak	1, 62, 124	5, 10, 15, 19	-20 to +20 degree
Frequency Error	1, 62, 124	5, 10, 15, 19	-90 Hz to +90 Hz
Power Ramping	1, 62, 124	5, 10, 15, 19	Mask
Modulation	1, 62, 124	5, 10, 15, 19	Mask
Switching Transcients	1, 62, 124	5, 10, 15, 19	Mask
Power reading			
Output Power	1, 62, 124	Level 19	5 dBm +/- 4.4 dB
	1, 62, 124	Level 15	13 dBm +/- 2.4 dB
	1, 62, 124	Level 10	21 dBm +/- 2.4 dB
	1, 62, 124	Level 5	32 dBm +/- 1.0 dB
RECEPTION			
Rx level	1, 62, 124	-100 dBm	8 to 13
Rx Qual		-100 dBm	0 to 1
Rx Level	1, 62, 124	-83 dBm	28 to 33
Rx Qual	1, 62, 124	-83 dBm	0 to 1
Rx Level	1, 62, 124	-60 dBm	48 to 53
Rx Qual	1, 62, 124	-60 dBm	0 to 1
TCH LOOP			
SENSITIVITY			
BER at -85dbm	1, 62, 124		0%
FER at -85dbm	1, 62, 124		0%
BER at –102dbm	1, 62, 124		2.44%
FER at –102dbm	1, 62, 124		0%

8.2.7 PCN Specification (1800 Mhz)

Test Parameters	Channel	Level	Standard Specification
EMISSION			
Phase error RMS	512, 635, 760, 885	0, 5, 10	0 to 5.0 degree
Phase error Peak		0, 5, 10	-20 to +20 degree
Frequency Error		0, 5, 10	-180 Hz to + 180 Hz
Power Ramping		0, 5, 10	Mask
Modulation		0, 5, 10	Mask
Switching Transcients		0, 5, 10	Mask
Power reading			
Output Power	512, 635, 760, 885	Level 15	0 +/- 5.0 dBm
		Level 10	10 +/- 4.0 dBm
		Level 5	20 +/- 3.0 dBm
		Level 0	30 +/- 2.0 dBm
RECEPTION			
Rx level	512, 635, 760, 885	-100dbm	8 to 13
Rx Qual		-100dbm	0 to 1
Rx Level		-80dbm	28 to 33
Rx Qual		-80dbm	0 to 1
Rx Level		-60dbm	48 to 53
Rx Qual		-60dbm	0 to 1
TCH LOOP			
SENSITIVITY			
BER at -85dbm	512, 635, 760, 885		0%
FER at -85dbm			0%
BER at –102dbm			2.44%
FER at –102dbm			0%

8.3 Charging IGN (Ignition) - Battery

8.3.1 Plug the connector of the charger into the right socket at the base of the PRODUCT.

The battery symbol should indicates the state of the charge process:

Bars moving	-	means the battery is charging.
Steady	-	means the battery is fully charged.

If the battery is completely discharged, the battery icon will only appear 2 to 3 minutes after being connected to the charger.

8.3.2 Remove the charger by unplugging the connector of the charger out of the right socket at the base of the PRODUCT.

Remove the battery.
Remove the Production Test SIM card by gently sliding it out of the slot.

9.0 Assembly / Dismantlement procedures

During dismantlement and assembly operations, an antistatic bracelet must be used.

9.1 Dismantlement

9.1.1 Unscrew the ANTENNA

9.1.2 Take the product, remove TOP COVER and BATTERY

9.1.3 Remove the SIM card

9.1.4 Take the electrical screwdriver

9.1.5 Unscrew the M1,6x4,4mm screw on the SIM connector location

9.1.6 Unscrew the 5 M1,6x13,5mm screws

9.1.7 Unscrew the M1,6x9mm white screw

9.1.8 Remove the REAR CABINET

9.1.9 Remove the WHOLE BOARD from the FRONT CABINET

9.1.10 Remove the BATTERY CONTACTS from the connector (SUPPORT CONTACTS)

9.1.11 Unfasten the vibrator.

9.1.12 Remove the LCD JOINT

9.1.13 Unfasten the LCD

Warning : Do not put your fingers on Zebra connector and copper areas

9.1.14 Unfasten the SUPPORT EARPIECE

9.1.15 Unscrew the M1,6x9mm white screw

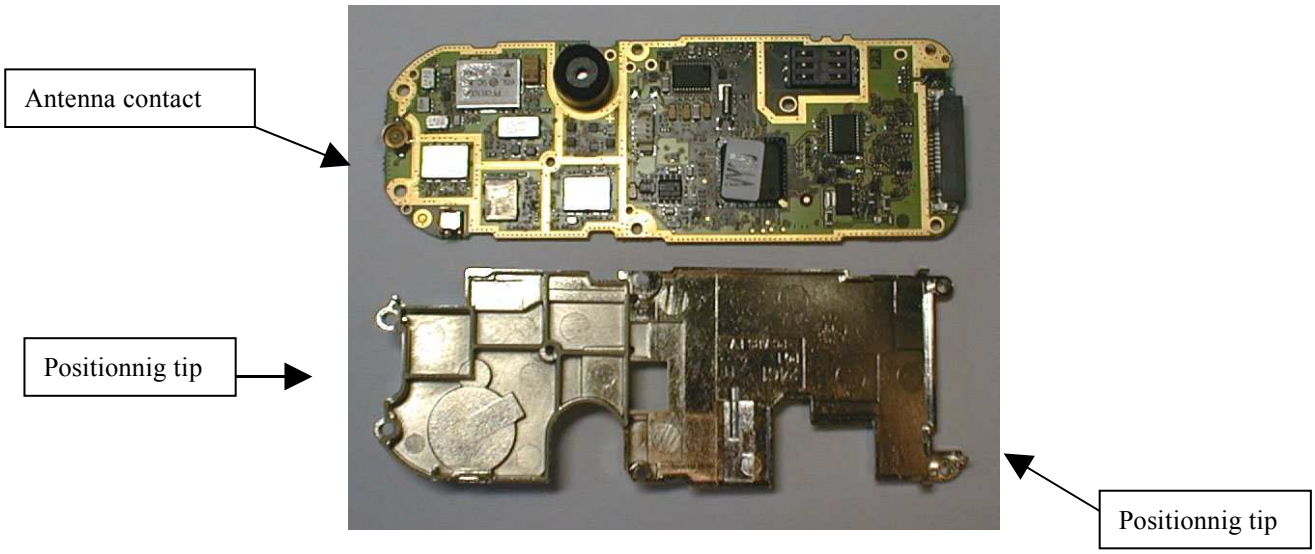
9.1.16 Unfasten the SHIELDINGs

9.2 Assembly

9.2.1 Take set down the REAR SHIELDING on the antistatic tablecloth.

9.2.2 Take the BOARD and fix it on the REAR SHIELDING.

9.2.3 Check the presence and the straightness of the antenna contacts.

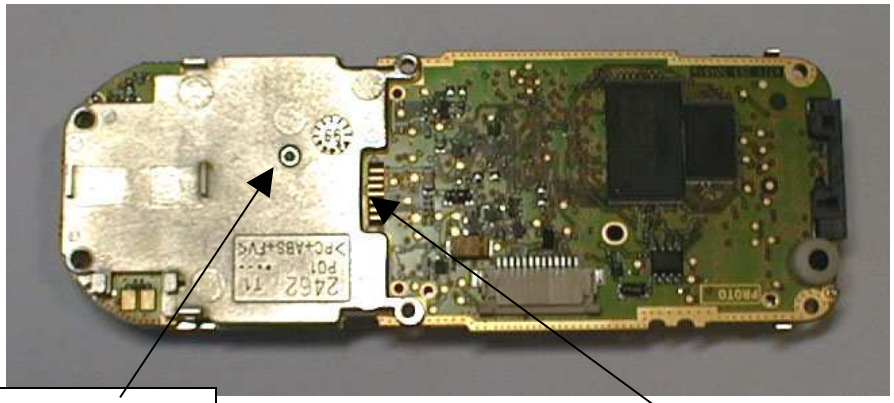


9.2.4 Take, fix the FRONT SHIELDING on the BOARD

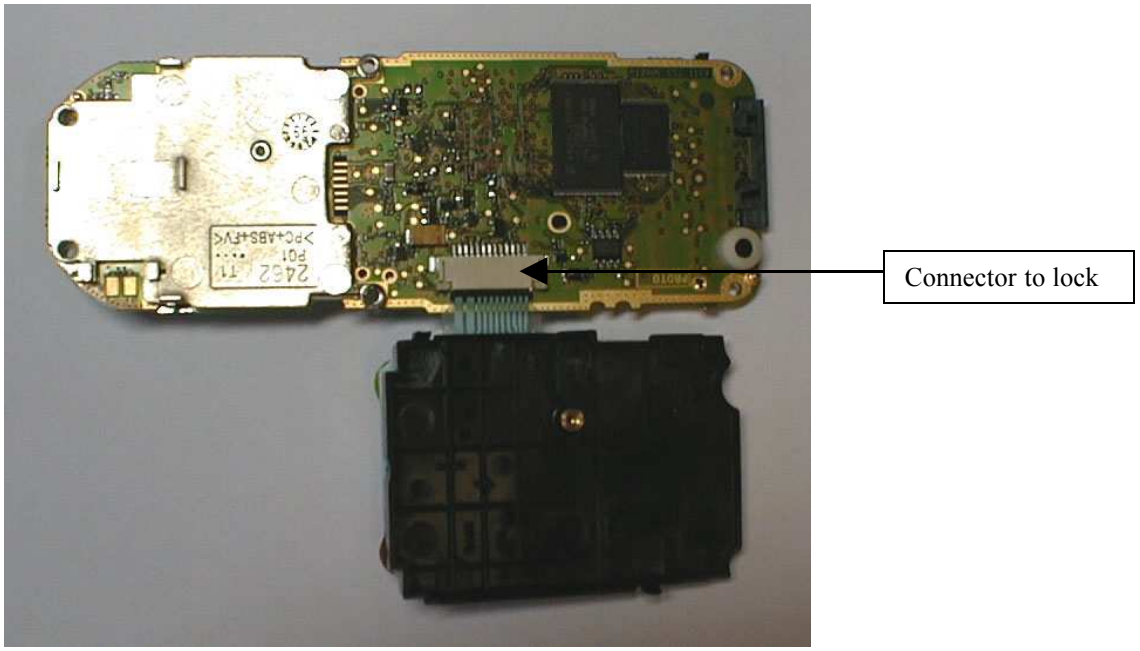
9.2.5 Take the electrical screwdriver (screwdriver power 0,18 Nm)

9.2.6 Take and screw down a M1,6x9mm white screw on the SHIELDING

9.2.7 Attach the SUPPORT EARPIECE on the FRONT SHIELDING



9.2.8 Fasten the KEYPAD (don't forget to lock the connector)

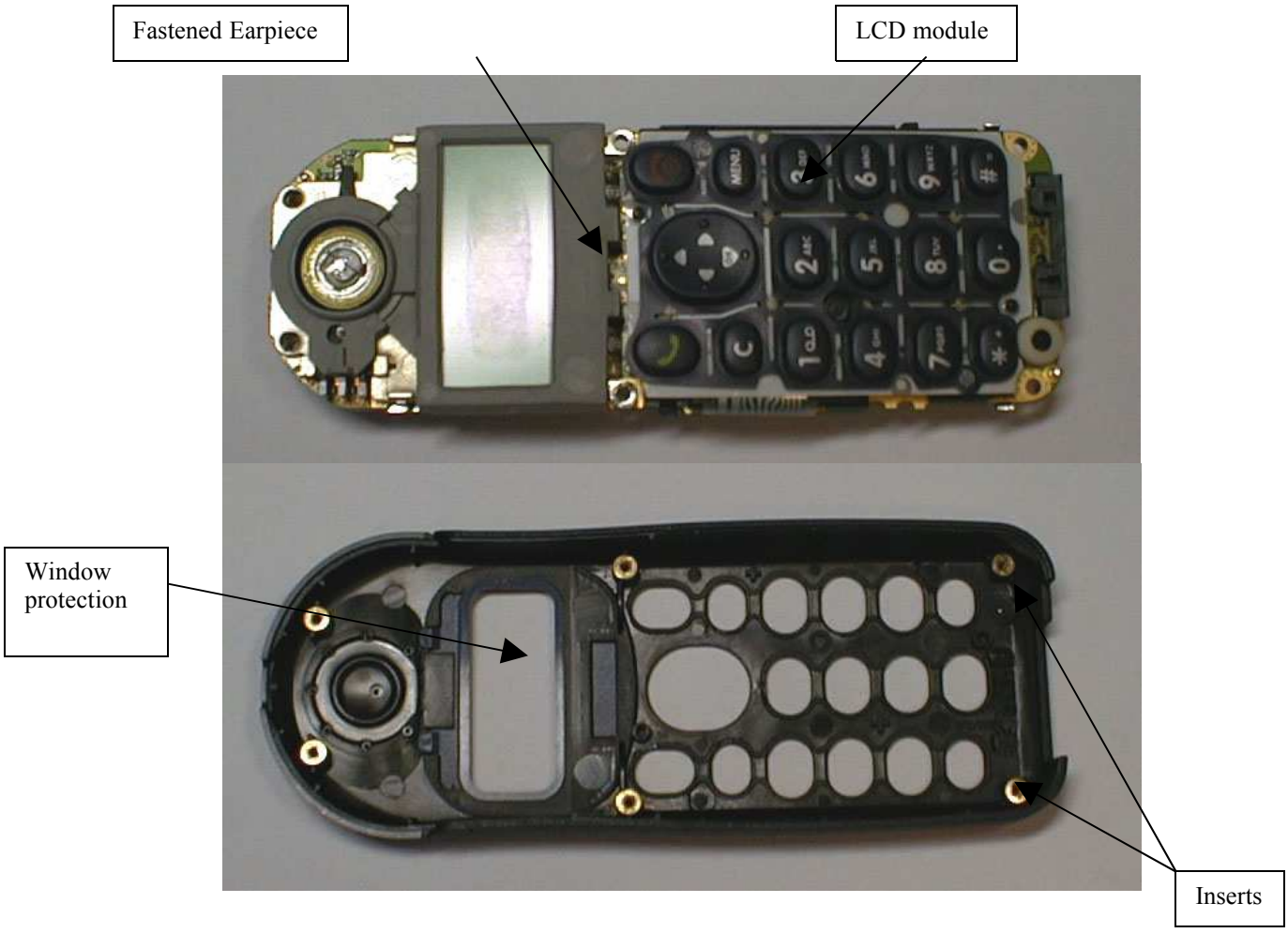


9.2.8 Take and fix the LCD on the BOARD

9.2.9 Attach the SUPPORT EARPIECE on the FRONT SHIELDING

9.2.10 Remove the LCD PROTECTION

9.2.11 Take, put THE LCD JOINT on the LCD and EARPIECE



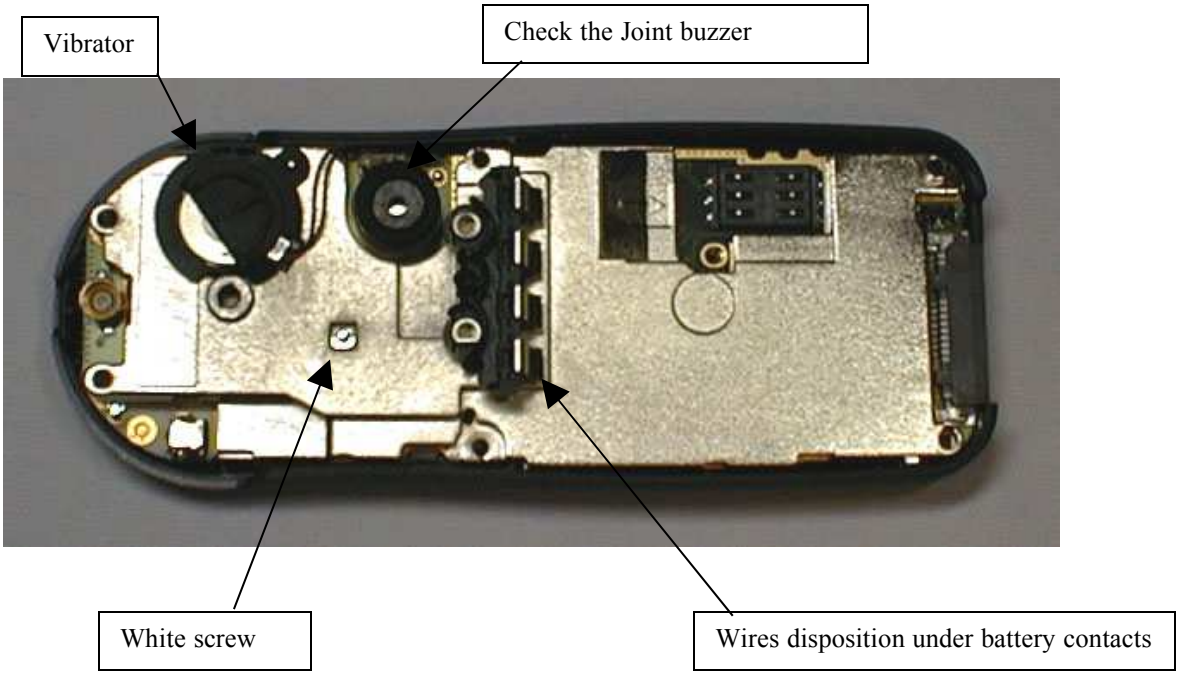
9.2.12 Take, turn around the FRONT CABINET on the antistatic tablecloth

9.2.13 Check the presence of the 6 inserts and the window's film protection

9.2.14 Blow on the LCD with the ionizing gun

Inserts

9.2.15 Take the whole BOARD, return it into the FRONT CABINET



9.2.16 Check the white screw presence on the Shielding

9.2.17 Check the JOINT BUZZER presence

9.2.18 Take, plug the Vibrator cable to the small connector and set the VIBRATOR in the right location

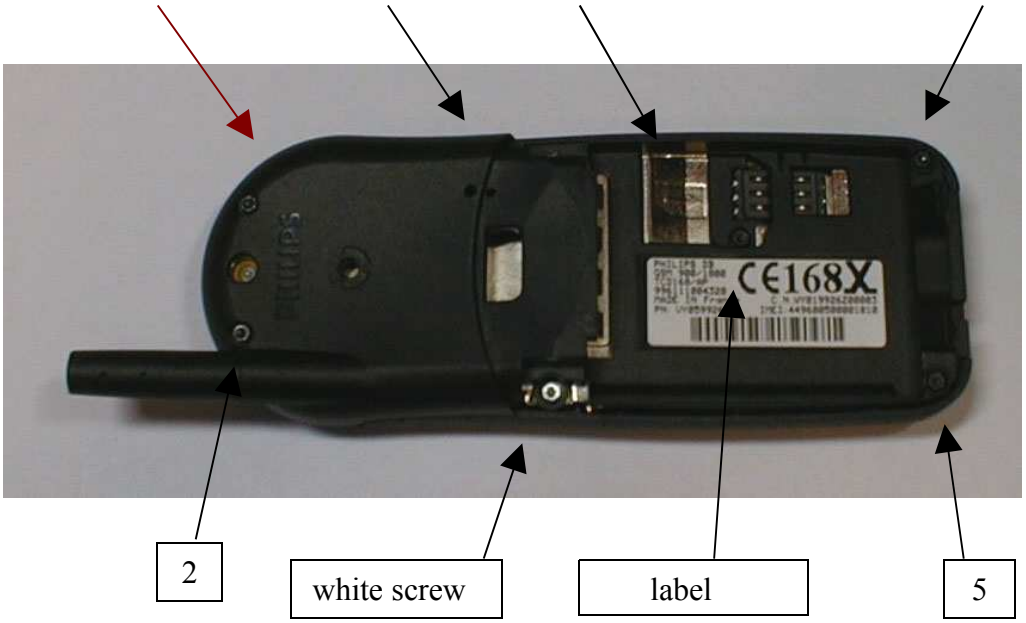
9.2.19 Take, attach the BATTERY CONTACTS in the connector (SUPPORT CONTACT)

9.2.20 Dispose the wires above the connector

Warning : no Wire should be discernable after the rear housing lock

9.2.21 Take, put the REAR HOUSING on the product

3	1	small screw	4



9.2.22 Take the electrical screwdriver

9.2.23 Take and screw down a M1,6x9mm white screw on the HOUSING

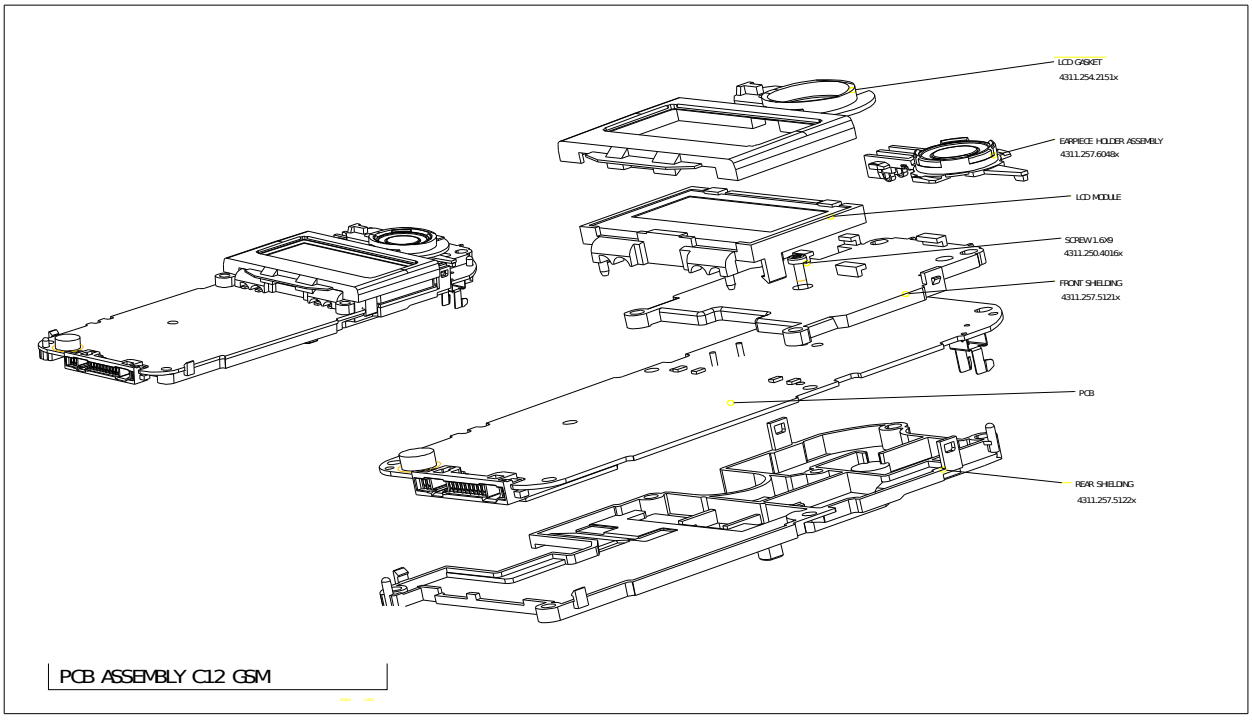
9.2.24 Take and screw down 5 M1,6x13,5mm screw on the HOUSING

9.2.25 Take and screw down a M1,6x4,4mm screw on the SIM connector location

9.2.26 Stick the LABEL on the back

9.2.27 Screw the ANTENNA

9.3 Overview



10.0 Defaults Settings

10.1 Reset customer parameters.

To reset customer parameters, it must use a GSM String. This Gsm String is

#RSAV*#** or ***#7728#.

So, the defaults settings of the manufacturer are actived.

10.2 Use of the GSM string **#RSAV*# or *#7728*#.*

Procedure to follow :

- Turn on the mobile (a SP SIM card is not necessary).
- Enter the Gsm String ***#RSAV*#** or ***#7728***#.
- You can see “Reset” but the customer parameters are not reset yet.
- Turn off the mobile.
- When you will turn on, the defaults settings will be actived.

11.0 Solutions in case of problem during tests

If for any reason the phone needs to be disassembled to fix a defect detected during the test procedure, a complete functional test and a RF test must be done.

11.1 The mobile does not switch on

- Check the tactile feeling of the ON/OFF button.
- Remove the battery. Check that both phone and battery contacts are not damaged.
- Clean the contacts.
- Plug the battery again, to be sure that it is securely fitted. Charge the mobile until the icon has stopped flashing.

Then unplug it from the charger and try to switch the mobile on.

If it's still not switching on, try to fix the mobile. If the failure can't be found out then send the mobile to repair.

11.2 Charge does not start or no charger detection

- Check the charger contacts for dust or missing pins.
- Check the mobile connector.
- Remove the battery. Check that both phone and battery contacts are not damaged.
- Check the charger individually with a reference mobile. If the charger is working properly try to charge the customer mobile with a reference battery.

If neither the battery, nor the charger is to be incriminated, send the mobile for repair.

11.3 The display show "No SIM card. Please insert your SIM card." Or "SIM FAILURE"

- If the SIM card cannot be inserted, check for any foreign part and try to remove it.
- Check the SIM card connector. All contacts must be at the same level. Examine that no dust is present on the connector contacts and on the SIM card contacts. If the SIM card connector is defective change it
- If the test SIM card can be detected but the message "SIM Failure" remains with customer card, his card must be damaged. Ask the customer to contact his network operator.

Otherwise send the mobile to repair

11.4 Display problems

Contrast, icons and matrix of the display can be checked with the test SIM card by pressing keys 5, 6 and 7.

If everything is working in test configuration that means that a phone setting is disable or not suitable. It can be solved in the phone menu.
Change the LCD if necessary (not for small scratches).
Otherwise send the mobile to repair

11.5 Buzzer problems

Buzzer tone can be checked with the test SIM card by pressing keys 1 and □.

- If it does not sound properly, change the buzzer. If the failure can't be found out then send the mobile to repair.

11.6 No sound in Loudspeaker

- Check microphone and earpiece, change them if necessary. If the failure can not be found out, then send the mobile to repair.

11.7 Communications problems

- Sound quality can be checked in audio loop test (sound distortion, whistling, echo, …)
- If the mobile passes the radio test successfully, we can assume that the phone is working properly. The customer must check the coverage area of his network operator or that he is not using the phone in a radio shadow
(outside the coverage area, in a tunnel or between tall buildings, …)

- If the mobile does not pass the radio test send the mobile for repair.

11.8 Defective antenna

- If the antenna is broken or curved => replace it

11.9 Keyboard problems

-The keyboard can be checked with the test SIM card.
- If a key or a row is not responding, check the keyboard, change it if necessary. If the failure cannot be found out, send the mobile to repair.

11.10 Can't send SMS messages

- Check the center number. Maybe it is empty or wrong.

ANNEX 1

IRIS REPAIR CODING SYSTEM

Symptom code — The code '0000' is used for No Fault Found

Condition code

1-Constant
2-Intermitent
4-Two hours after switch on.

		1 NO ACTION	2 LEVEL	3 QUALITY	4 NOISE	6 PHYSICAL PROBLEMS	7 SPECIAL FUNCTIONS	8 OTHER CONDITIONS
1	GENERAL	**Power problem** 117 Short autonomy 119 Does not switch on 11B Switch on/off recurrent 11X Other Pow Sup problem	**Charging problem** 121 Does not charge battery	**Display function problem** 136 Character/pixel absent 13B No backlight 13B No backlight		**Physical damage** 166 Damaged plug or socket 169 Defective antenna 16G Broken LCD	**General function problem** 171 Faulty clock function 178 Faulty memory function	**Special requirements** 185 Upgrade to be done only 18Z Symptom not available
2	COMMUNICATION	**No reception** 21A Interrupted communication	**220 Reception level problem**	**Transmission problem** 231 No emission 234 No radio link between Handset & Base	**240 Noisy communication** 244 Echo		**Special communication problem** 277 No ringing (dial) tone 278 No buzzer ring 279 Not registering	
5	AUDIO	**510 No audio**	**Audio level problem** 521 Low audio level			**560 Poor Audio recording** (answering)	**Poor special audio function** 57A Hands-free problem	
6	MECHANISM	**No mechanical** 61B Vibrator not operable 61D Pilot/compass key not operable			**Mechanical noise** 648 Foreign parts inside			
7	DATA PROCESSING	**No data processing operation** 715 No keyboard operation 72B No subscription					**Special data processing function problem** 774 Defective CLI 775 Tariff update failure	**SIM card problem** 781 Simblock 782 IMSI 783 Does not read SIM card 785 SIM Error 48xx

Each returned product must have an IRIS code to identify the failure

ANNEX 2 : Recommended Part List – TCD188

COMMON PARTS - Out of Warranty

REFERENCE	DESIGNATION	POSITION	REPAIR LEVEL
4311 257 60746	FRONT SHIELDING	0101	2
4311 257 60735	REAR SHEILDING ASS'Y	0102	2
4311 257 51237	REAR HOUSING ASS'Y C12C13	0104	2
4311 258 10153	SUPPORT CONTACT ASS'Y	0113	2
4311 250 40154	SCREW M1,6x13,5	0178	2
4311 250 40164	SCREW M1,6x9	0176	2
4311 250 40223	SCREW TORX M1,6 4x4	0177	2
4311 258 73511	FIXE ANTENNA C13 DB	1708	1
2722 171 07182	LCD AD 47306	1710	2
2422 033 00293	CON CCM04-1402-R901	1501	2
4311 254 24642	GASKET MICRO C13DB	0179	2
4311 254 21265	GASKET LCD C13/C13DB	0180	2
242203300293	CON CCM04-1402-R901+B50	1501	2
431125751445	Plus Top cover Batt Ass'y AAWB	0090	1
431125751455	Slim Top cover Batt Ass'y AAAWB	0090	1
431125872452	Battery Slim 700 mAH	-	1
431125872462	Battery Plus	-	1
431125872413	Standard Charger EC	-	1
312242720943	Fast Charger Europe	-	1

France

OPERATOR	REFERENCE	DESIGNATION	POSITION	LEVEL
FTM				
	4311 254 34852	WINDOW NAVY BLUE	0080	2
	4311 254 34872	WINDOW CORAL BRONZE	0080	2
	4311 257 53243	FRONT HOUSSING ASS'Y NB	0103	2
	4311 257 53263	FRONT HOUSSING YACHT META	0103	2
	4311 258 60103	KEYBOARD + HOLDER NB	0110	2
	4311 258 60123	KEYPAD + HOLDER C14 COR B	0110	2

Spain

OPERATOR	REFERENCE	DESIGNATION	POSITION	LEVEL
TELSTRA				
	4311 254 34861	WINDOW AQUA-GREEN	0080	2
	4311 254 34851	WINDOW DEEP- BLUE	0080	2
	4311 254 34841	WINDOW BLUE-WAVE	0080	2
	4311 254 34871	WINDOW YACHT-METAL	0080	2
	4311 257 53253	FRONT HOUSSING AQUA GREEN	0103	2
	4311 257 52193	FRONT HOUSING ASS'Y NB	0103	2
	4311 257 53233	FRONT HOUSING ASS'Y LB	0103	2
	4311 257 53263	FRONT HOUSING YACHT META	0103	2
	4311 258 60113	KEYPAD + HOLDER AQUA GRE	0110	2
	4311 258 60103	KEYBOARD + HOLDER NB	0110	2
	4311 258 60093	KEYPAD + HOLDER ASS'Y LB	0110	2
	4311 258 60123	KEYPAD + HOLDER C14 COR B	0110	2
TELECEL				
	4311 254 34852	WINDOW DEEP BLUE	0080	2
	4311 254 34842	WINDOW BLUE WAVE	0080	2
	4311 257 53243	FRONT HOUSING ASS'Y NB	0103	2
	4311 257 53233	FRONT HOUSSING ASS'Y LB	0103	2
	4311 258 60103	KEYBOARD + HOLDER NB	0110	2
	4311 258 60093	KEYPAD + HOLDER ASS'Y LB	0110	2

Germany

OPERATOR	REFERENCE	DESIGNATION	POSITION	LEVEL

E-PLUS				
	4311 254 34852	WINDOW DEEP-BLUE	0080	2
	4311 257 53243	FRONT HOUSING ASS'Y NB	0103	2
	4311 258 60103	KEYBOARD + HOLDER NB	0110	2
D 2				
	43 11 254 35901	WINDOW D2 AQUA GREEN	0080	2
	4311 254 35891	WINDOW D2 NAVY BLUE	0080	2
	4311 257 53253	FRONT HOUSING AQUA GREEN	0103	2
	4311 257 53243	KEYBAORD + HOLDER NB	0103	2
	4311 258 60113	KEYPAD + HOLDER AQUA GRE	0110	2
	4311 258 60103	KEYBOARD + HOLDER NB	0110	2